3.10 SETTING-UP READ HEAD (If Read Head Removed)

Cautions

(1) Static Sensitive Devices are used on the PCB. Ensure that the appropriate precautions are taken when handling these boards.

(2) Care must be taken when making adjustments to the reading head. Ensure that it does not foul or damage the grating.

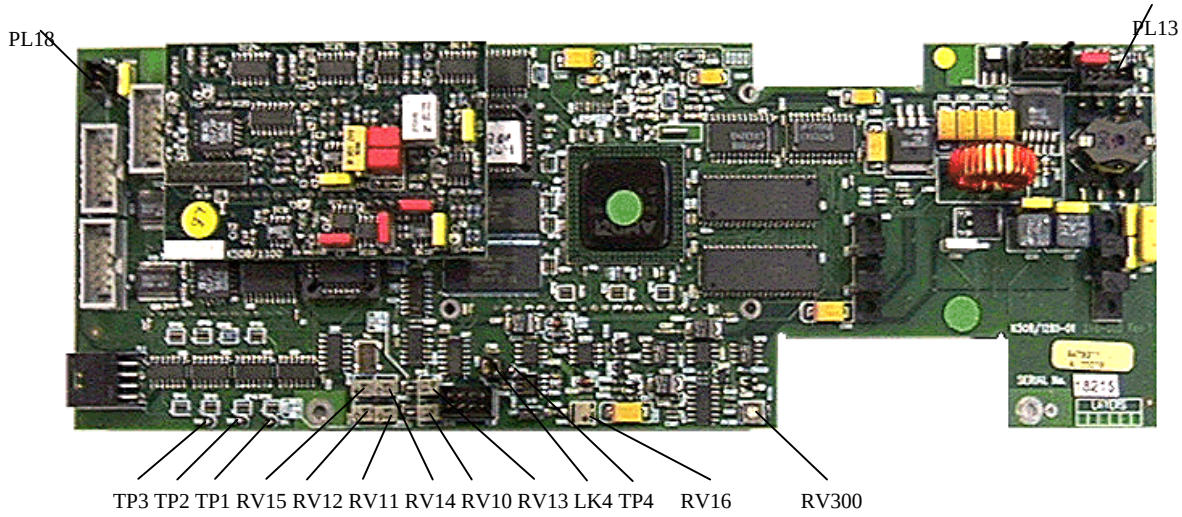

Fig 24 Location of test points and variable resistor adjustment

3.10.1 Connect the probes of an Oscilloscope (incorporating X-Y facilities suitable for displaying a Lissajous figure) to the Test Points on the UUT as shown below:

CH1 (X) to TP2 – (CHB)

CH1 (Y) to TP1 – (CHA)

Connect the ground to TP3 (0VA). Ground both channels on the Oscilloscope, and centre the dot trace on the display. Set both channels to DC.

3.10.2 Check the datum bar is free to traverse backwards and forwards.

3.10.4 Switch on the Power Supply to the UUT and check that the LCD Display on the UUT is not lit.

3.10.5 Press SW2 on the UUT and check that the LCD displays;

Taylor Hobson PRECISION

V1.00.08PR
0.00mm

-***.** um

Adjust RV300 on the UUT for optimum contrast on the LCD Display.

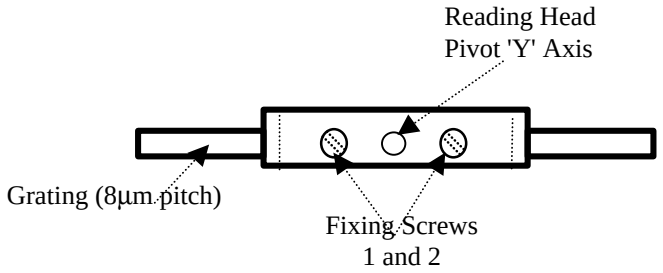

Fig 25 Reading head adjusters

3.10.6 Traverse the datum manually and adjust the reading head until a Lissajous figure is seen. Whilst monitoring the Oscilloscope and referring (Fig 25), carefully adjust the reading head in the Y axis, until the Lissajous signal is observed. The diameter and shape of the signal are not relevant at this stage. Carefully tighten the two M3 fixing screws 1 and 2, sufficiently such that the reading head will not move during further adjustment.

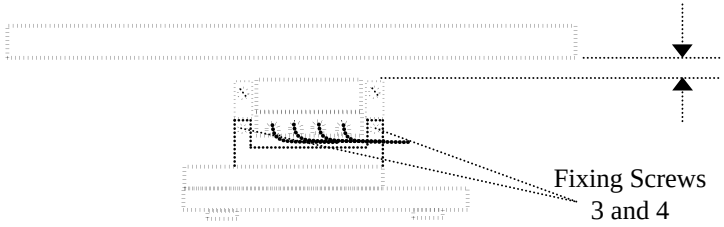

Fig 26 Reading head fixing screws

3.10.7 Referring to (Fig 26) slacken the fixing screws 3 and 4 and, observing the Lissajous signal, adjust any offset. The correct signal can be seen in Fig 27, whilst Fig 28 shows examples of incorrect signals. N.B. It may be necessary to readjust the reading head as described in Para 3.10.6. This may be done by slackening the fixing screws 1 and 2, and lightly tapping either end of the reading head to adjust the Lissajous signal.

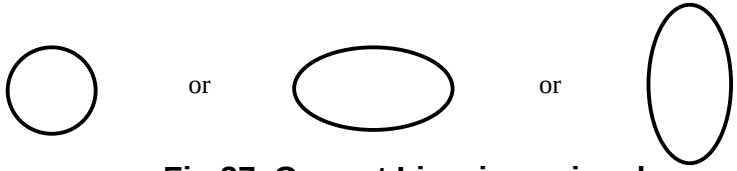

Fig 27 Correct Lissajous signals

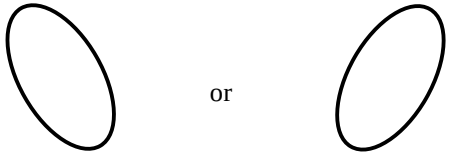

Fig 28 Incorrect Lissajous signals

3.10.8 Adjust RV10 and RV13 to centre the Lissajous figure about 0V. Any distortion of the signal at this stage may require readjustment of the reading head in the Z axis as described in Para 3.10.7.

3.10.9 Adjust RV16 to increase or decrease the diameter of the Lissajous figure, if any saturation has occurred. This is noticed when the signal appears 'flattened' or 'squashed'. It may be necessary to readjust the offset of the signal, if distortion occurs.

3.10.10 Any error in phase angle, as shown in Fig 28, can be removed by adjusting the reading head in the Z axis as in Para.3.10 7.

3.10.11 Switch on the Phase Meter, and connect CHA to TP1 and CHB to TP 2. Check that CHA leads CHB (as indicated by the LED) , when the datum bar is extending. N.B. Alternatively, the phase lead/lag can be reversed by adjusting the reading head in the Z axis as in Para.3.10.7.

3.10.12 Monitor the Phase Meter, and adjust the reading head for an angle of 90° ±5°.

3.10.13 Tighten the fixing screws whilst monitoring the phase. Readjust the reading head if necessary.

3.10.14 Adjust RV14 and RV11 on the Traverse Board to centre the Lissajous to OV ±100 mV.

3.10.15 Adjust RV12 and RV15 on the Traverse Board to obtain a Lissajous diameter of between 15V and 20V. It may be possible to increase the overall diameter of the Lissajous by adjusting RV16.

3.10.16 Accrulite the three setting holes on the Reading Head Bracket H45-9220 and the two holes on the Fixed Pad Block H45-9208.

3.10.17 Remove the Oscilloscope leads from the UUT and reconnect the motor.